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CHAPTER 1: INTRODUCTION

1.1 BEFORE YOU START

Thank you for choosing our product. Before you start installing the mainboard, please make sure you follow the instructions below:

- Prepare a dry and stable working environment with sufficient lighting.
- Always disconnect the system from power outlet before operation.
- Before you take the mainboard out from anti-static bag, ground yourself properly by touching any safely grounded appliance, or use grounded wrist strap to remove the static charge.
- Avoid touching the components on mainboard or the rear side of the board unless necessary. Hold the board on the edge, do not try to bend or flex the board.
- Do not leave any unfastened small parts inside the case after installation. Loose parts will cause short circuits which may damage the equipment.
- Keep the system from dangerous area, such as heat source, humid air, and water.
- Please switch on/off the machine normally. That is, DO NOT pull out power cord directly from the mainboard or the system may damage.

1.2 PACKAGE CHECKLIST

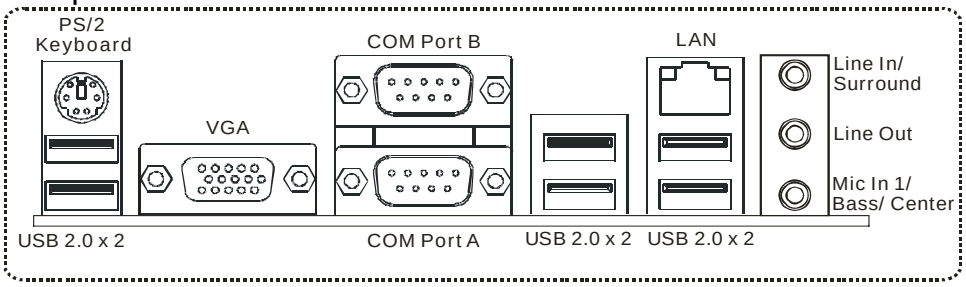
- Mini-ITX Mainboard x 1
- Fully Setup Driver CD x 1
- I/O Bracket x 1
- IDE Cable x 1 (Optional)
- SATA Cable x 1 (Optional)

1.3 MAINBOARD SPECIFICATIONS

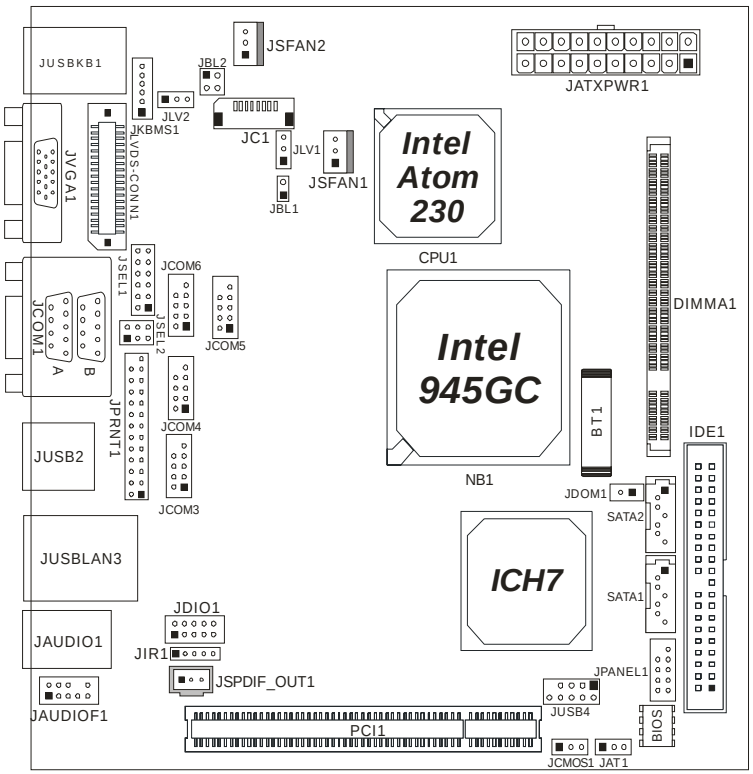
Specifications			
CPU	Intel CPU On-board Intel Atom 230 CPU (1.6GHz) TDP 4W		Co-lay Atom 330 TDP/8W for Optional
FSB	Supports up to 533 MHz		
Chipset	Northbridge: Intel 945GC Southbridge: ICH7		
Graphic	Intel® Graphic Media Accelerator 950		Max Shared Video Memory is 8 MB Supports LVDS
Super I/O	ITE IT8718F Provides the most commonly used legacy Super I/O functionality.		128pin type Environment Control initiatives, H/W Monitor Fan Speed Controller
Main Memory	SO-DIMM (200pin) Slot x 1 Supports DDR2 533 / 667 MHz DIMM supports 256MB/512MB/1GB Max Memory Capicity 1GB		Side-port memory interface Registered DIMM or ECC DIMM is not supported
IDE	ICH7		Ultra DMA 33/66/100 Bus Master Mode Supports PIO Mode 0~4 Supports 2 IDE devices
SATA	ICH7		SATA Version 2.0 specification compliant Data transfer rates up to 3.0 Gbit/s
LAN	Realtek RTL 8111C		10 / 100 / 1000 Mb/s auto negotiation Half / Full duplex capability
Sound Codec	Realtek ALC662		5.1 channels audio out High-Definition Audio support
Slots	PCI slot	x1	
On Board Connector & Header	IDE Connector	x1	
	SATA2 Connector	x2	
	Front Panel Header	x1	
	Front Audio Header	x1	
	S/PDIF Out Header	x1	
	Digital I/O Connector	x1	
	System Fan Header	x2	
	Clear CMOS Header	x1	
	H/W Power Loss Recovery Header	x1	
	Parallel Connector	x1	

Specifications			
	Serial Connector	x4	
	RS-232/422/485 Header	x2	
	JIR Pin Header	x1	
	USB 2.0 Header	x1	
	LVDS Connector	x1	
	LCD Power Select Header	x1	
	LCD Backlight Power ON/OFF Header	x1	
	LCD Backlight Inverter	x1	
	Inverter Power Select Header	x1	
	Backlight Brightness Adjust Header	x1	
	PS/2 Keyboard/Mouse Header	x1	
	Power Connector for DOM Card	x1	
	Power Connector (20pin)	x1	
Back Panel I/O	PS/2 Keyboard	x1	
	Serial Port	x2	
	VGA Port	x1	
	LAN port	x1	
	USB Port	x6	
	Audio Jack	x3	
Board Size	170 mm (W) x 170 mm (L)		Mini-ITX
OS Support	Windows XP / CE and Linux		Biostar Reserves the right to add or remove support for any OS with or without notice.

1.4 REAR PANEL



1.5 MAINBOARD LAYOUT



Note: ■ represents the 1st pin.

CHAPTER 2: INSTALLATION

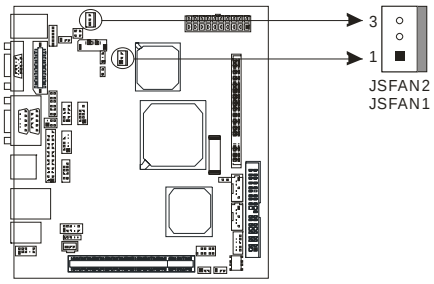
2.1 CPU

The mainboard includes an embedded Intel Atom 230 processor, and a heatsink has been installed to provide sufficient cooling.

2.2 FAN HEADERS

These fan headers support cooling-fans built in the system. The fan cable and connector may be different according to the fan manufacturer. Moreover, JSFAN1 supports Smart Fan function.

System Fan Header



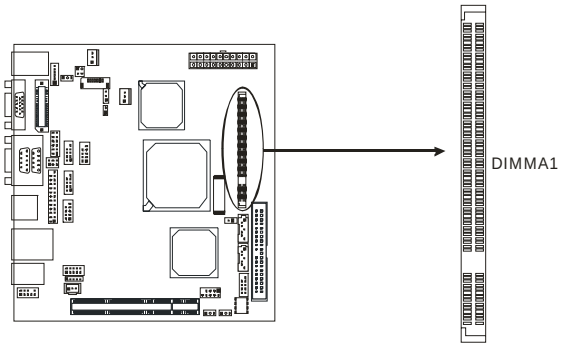
Pin	Assignment
1	Ground
2	+12V
3	FAN RPM rate sense

Note:

The System Fan Headers support 3-pin head connector. When connecting with wires onto connectors, please note that the red wire is the positive and should be connected to pin#2, and the black wire is Ground and should be connected to GND.

2.3 System Memory

Memory Modules (200pin SO-DIMM)



2 Align a DIMM on the slot such that the notch on the DIMM matches the break on the Slot.

3 Insert the DIMM firmly into the slot until the retaining chip snap back in place and the DIMM is properly seated.

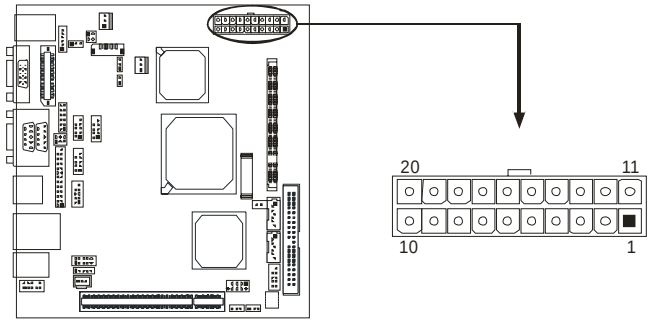
Memory Capacity

DIMM Socket Location	DDR2 Module	Total Memory Size
DIMMA1	256MB/512MB/1GB	Max is 1GB.

2.4 POWER SUPPLY

ATX Power Source Connector (20-pin)

This connector allows user to connect 20-pin power connector on the power supply.

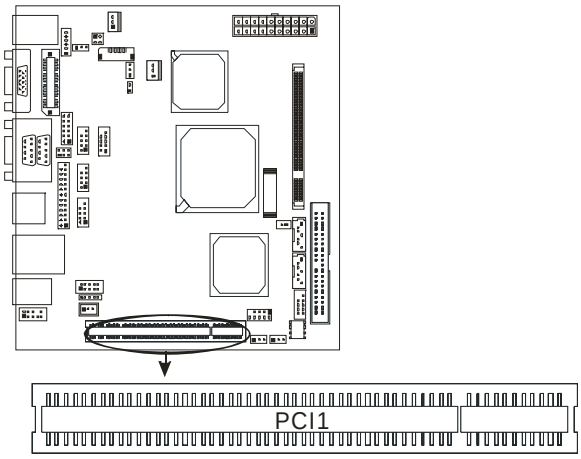


Pin	Assignment	Pin	Assignment
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	Power Supply On
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	Power Good	18	NC
9	+5V Standby	19	+5V
10	+12V	20	+5V

2.5 Onboard Slot/Connector/Header/Jumper

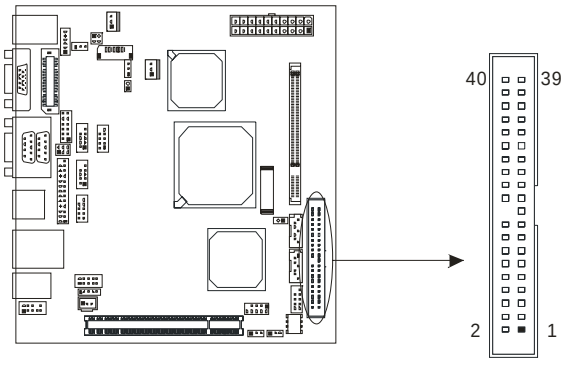
Peripheral Component Interconnect Slot

This mainboard is equipped with 1 standard PCI slot. PCI stands for Peripheral Component Interconnect, and it is a bus standard for expansion cards. This PCI slot is designated as 32 bits.



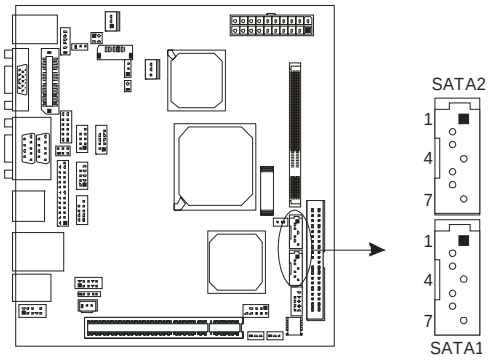
ATA Device Connector

The mainboard has an integrated IDE Controller that provides PIO Mode 0~4, Bus Master, and Ultra DMA 33/66/100 functionality. It has one IDE connector which can connect a master and a slave drive, so you can connect up to two ATA devices.



Serial ATA Connectors

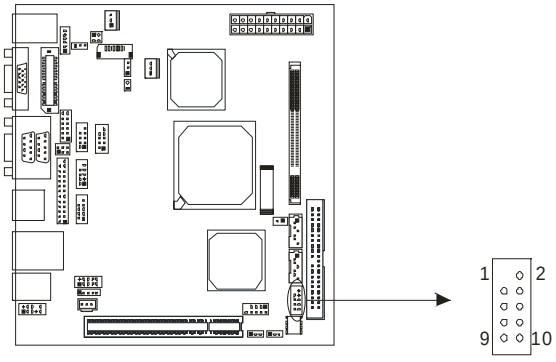
These next generation connectors support the thin Serial ATA cable for primary internal storage devices. The current Serial ATA interface allows up to 3.0 Gbit/s data transfer rate.



Pin	Assignment
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

Front Panel Header

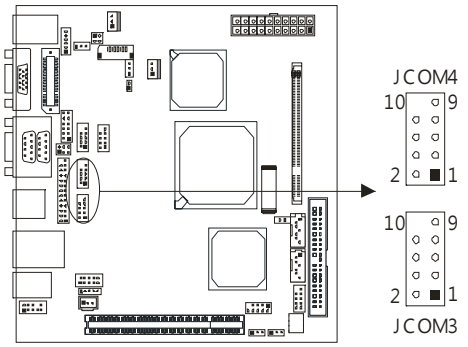
This 10-pin header includes Power-on, Reset, HDD LED, and Power LED connection. It allows user to connect the system case's front panel switch functions.



Pin	Assignment	Function	Pin	Assignment	Function
1	Key	N/A	2	Power LED+	Power LED
3	HD LED+	HDD LED	4	Power LED+	
5	HD LED-		6	Power LED-	
7	Reset GND	Reset Button	8	Power	Power Button
9	Reset		10	Power GND	

Serial port Connector (JCOM3 & JCOM4)

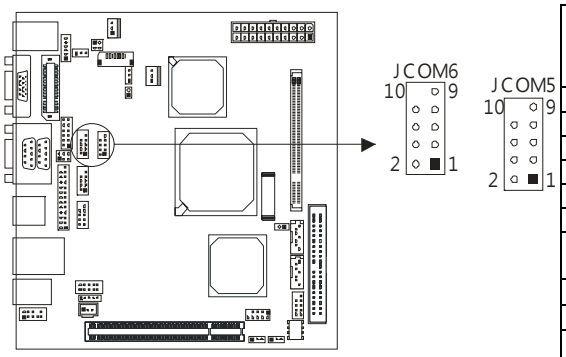
The motherboard has a Serial Port Connector for connecting RS-232 Port.



Pin	Assignment
1	Carrier detect
2	Received data
3	Transmitted
4	Data terminal
5	Signal ground
6	Data set ready
7	Request to send
8	Clear to send
9	+5V
10	NC

Serial port Connector (JCOM5 & JCOM6)

The motherboard has a Serial Port Connector for connecting RS-232 Port.

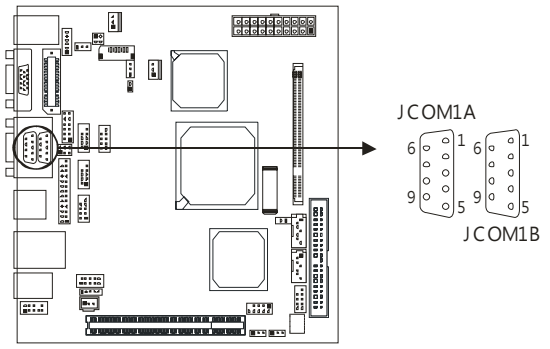


Pin	Assignment
1	Carrier detect
2	Received data
3	Transmitted
4	Data terminal
5	Signal ground
6	Data set ready
7	Request to send
8	Clear to send
9	+12V
10	NC

Note: Please notice ***Pin 9*** of every serial port connector. JCOM3 and JCOM4: +5V; JCOM5 and JCOM6: +12V.

Serial port Connector (JCOM1A & JCOM1B)

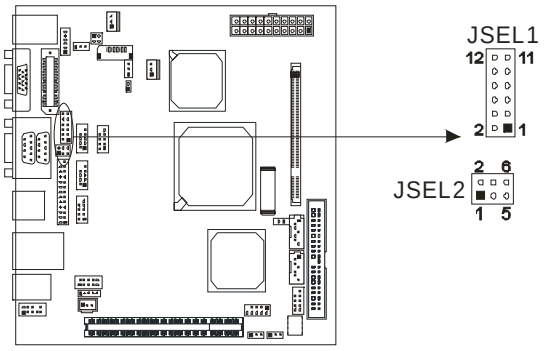
The motherboard has a Serial Port Connector for connecting RS-232 Port.



Pin	Assignment
1	Carrier detect
2	Received data
3	Transmitted
4	Data terminal
5	Signal ground
6	Data set ready
7	Request to send
8	Clear to send
9	+5V (JCOM1A) Ring (JOCM1B)
10	NC

RS-232/422/485 Headers

The headers determine that JCOM1A belongs to RS-232(Default), 422, or 485.

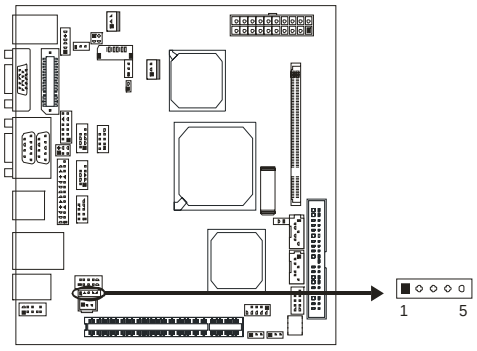


JSEL1		
RS-232	RS-422	RS-485
1-3	3-5	3-5
2-4	4-6	4-6
7-9	9-11	9-11
8-10	10-12	10-12
JSEL2		
1-2	RS-232	
3-4	RS-422	
5-6	RS-485	

Note: Please notice ***Pin 9*** of JCOM1A and of JCOM1B. JCOM1A: +5V; JCOM1B: Ring indicator.

Fast IrDA Infrared Module Header

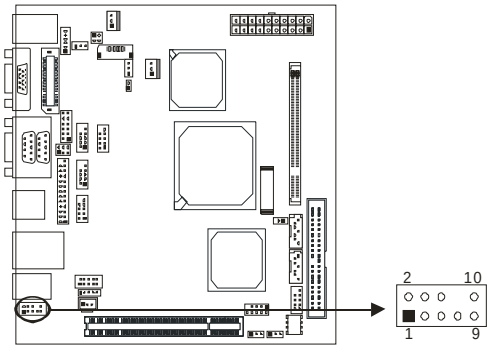
This header is for connecting to an IrDA module. The BIOS settings must be configured to activate the IR function.



Pin	Assignment
1	+5V
2	CIRRX
3	IRRX
4	GND
5	IRTX

Front Panel Audio Header

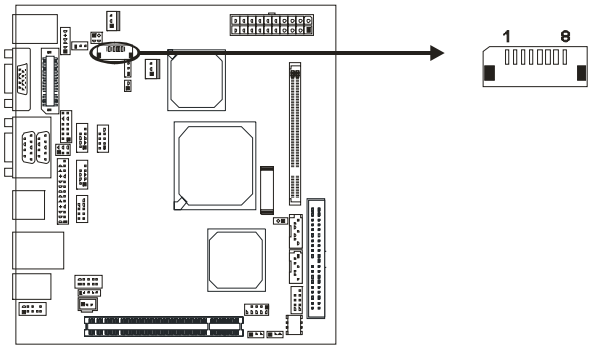
This is an interface for the front panel audio cable that allows convenient connection and control of audio devices. This header allows only HD audio front panel connector; AC'97 connector is not acceptable.



Pin	Assignment
1	Mic Left in
2	Ground
3	Mic Right in
4	Present Sense
5	Right line out
6	Jack Sense
7	Front Sense
8	Key
9	Left line out
10	Jack Sense

LCD Backlight Inverter

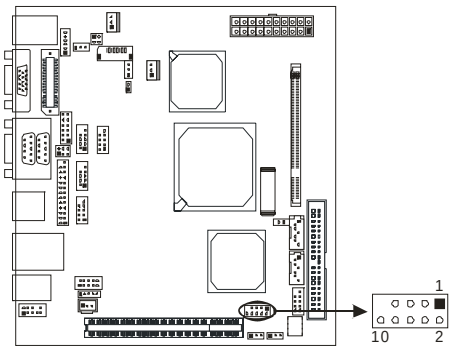
This connector is for connecting to LCD for providing backlight control function.



Pin	Assignment
1	5V/12V DC
2	5V/12V DC
3	NC
4	NC
5	Backlight On
6	Brightness Adjust
7	GND
8	GND

USB 2.0 Headers

The mainboard provides 1 front USB pin headers, allowing up to 2 additional USB 2.0 ports up to maximum throughput of 480 Mbps. Connect the USB cable into the pin header for using high-speed USB interface peripherals.



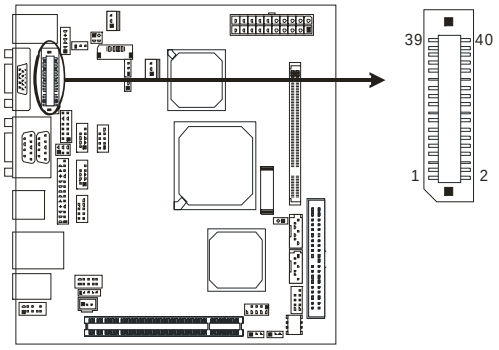
Pin	Assignment	Pin	Assignment
10	NC	9	Key
8	Ground	7	Ground
6	USB7+	5	USB6+
4	USB7-	3	USB6-
2	+5V (fused)	1	+5V (fused)

LVDS Connector

This connector is for devices requiring display interface such as LVDS.

This connector supports 18/24bit single-/dual-channel panels up to UXGA (1600 x 1200), 25 MHz to 112 MHz; at 24bpp

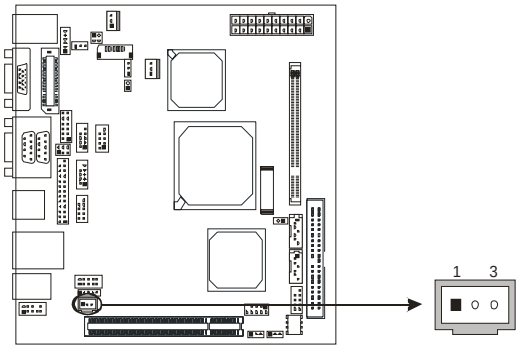
- Supports panel resolution from VGA through UXGA (1600 x 1200).
- Supports one Dual-Channel and two Single-Channel LVDS panel(s).



Pin	Assignment	Pin	Assignment
1	LVDS2_TX0- (Differential signal)	2	PVDD (+3.3V or +5V)
3	LVDS2_TX0+ (Differential signal)	4	PVDD (+3.3V or +5V)
5	GND	6	GND
7	LVDS2_TX1- (Differential signal)	8	GND
9	LVDS2_TX1+ (Differential signal)	10	LVDS1_TX0- (Differential signal)
11	GND	12	LVDS1_TX0+ (Differential signal)
13	LVDS2_TX2- (Differential signal)	14	GND
15	LVDS2_TX2+ (Differential signal)	16	LVDS1_TX1- ((Differential signal)
17	GND	18	LVDS1_TX1+ (Differential signal)
19	LVDS2_CLK- (Differential signal)	20	GND
21	LVDS2_CLK+ (Differential signal)	22	LVDS1_TX2- (Differential signal)
23	GND	24	LVDS1_TX2+(Differential signal)
25	LVDS2_TX3- (Differential signal)	26	GND
27	LVDS2_TX3+ (Differential signal)	28	LVDS1_CLK- (Differential signal)
29	+5V	30	LVDS1_CLK+(Differential signal)
31	I2C_CLK	32	GND
33	+3.3V	34	LVDS1_TX3- (Differential signal)
35	NC	36	LVDS1_TX3+ (Differential signal)
37	PVDD (+3.3V or +5V)	38	NC
39	PVDD (+3.3V or +5V)	40	I2C_DATA

Digital Audio-out Connector

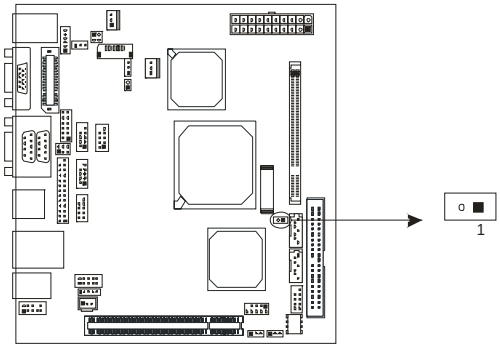
This connector allows user to connect the PCI bracket SPDIF output header.



Pin	Assignment
1	+5V
2	SPIDF_OUT
3	GND

DOM Card Power Connector

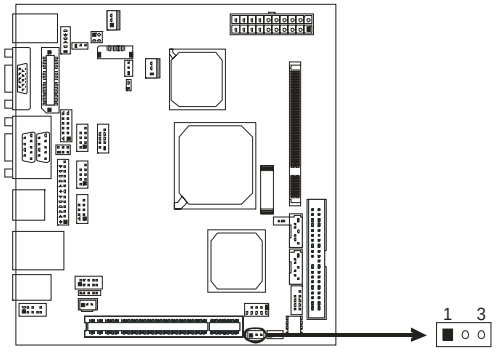
This connector provides power connection of a DOM card.



Pin	Assignment
1	+5V
2	GND

Clear CMOS Header *

By placing the jumper on pin2-3, it allows user to restore the BIOS safe setting and the CMOS data, please carefully follow the procedures to avoid damaging the mainboard.



Pin 1-2 Close: (default)
Normal Operation.

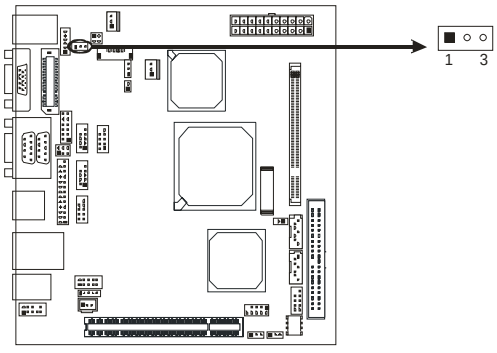
Pin 2-3 Close:
Clear CMOS data.

※ Clear CMOS Procedures:

1. Remove AC power line.
2. Set the jumper to “Pin 2-3 close”.
3. Wait for five seconds.
4. Set the jumper to “Pin 1-2 close”.
5. Power on the AC.
6. Reset your desired password or clear the CMOS data.

LCD Power Select Header *

This header allows you to select the LCD Power.

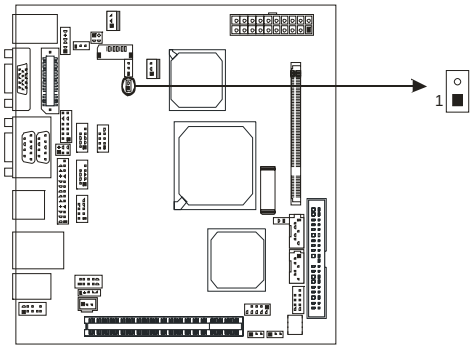


Pin 1-2 Close:
PVDD=3.3V
(default)

Pin 2-3 Close:
PVDD=5V

LCD Backlight Power ON/OFF Header *

This header allows you to control the LCD Backlight Power ON/OFF.

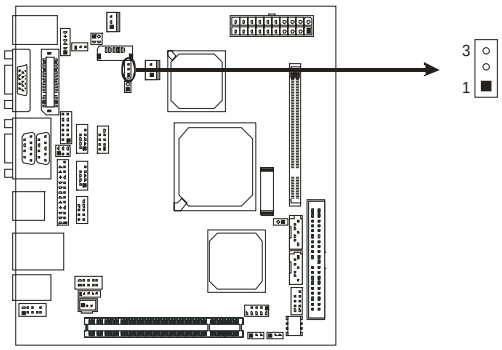


Header Close:
Backlight Power OFF

Header Open:
Backlight Power ON

Backlight Inverter Power Select Header *

This header is for selecting LCD Backlight Inverter Power.

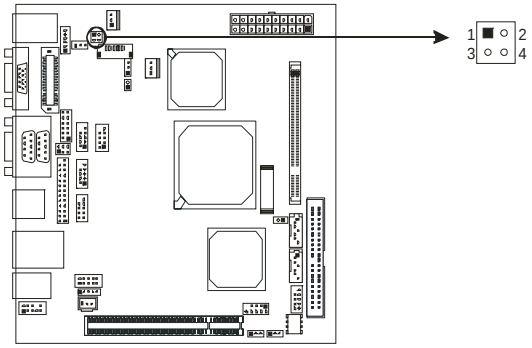


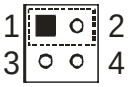
Pin 1-2 Close:
Inverter Power=5V

Pin 2-3 Close:
Inverter Power=12V
(default)

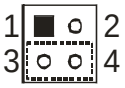
LCD Backlight Brightness Adjust Header *

This header is for adjusting LCD backlight brightness.





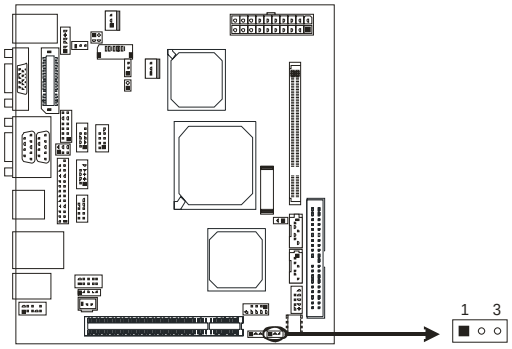
Short Pin 1-2:
Increase Brightness



Short Pin 3-4:
Decrease Brightness

Hardware Power Loss Recovery Header *

This header specifies how the system should do after a power fail. Setting Disabled will leave the system in power-off status after the power recovers. Setting Enabled will power-on the system immediately when the power returns.

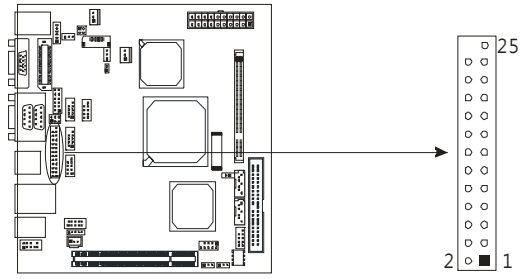


Pin 1-2 Close:
Enabled

Pin 2-3 Close:
Disabled (Default)

Printer Port Connector

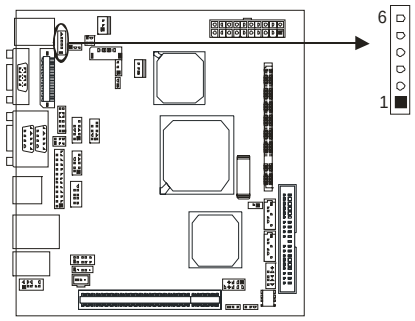
This header allows you to connect printer port on the PC.



Pin	Assignment	Pin	Assignment
1	-Strobe	14	Ground
2	-ALF	15	Data 6
3	Data 0	16	Ground
4	-Error	17	Data 7
5	Data 1	18	Ground
6	-Init	19	-ACK
7	Data 2	20	Ground
8	-Scltin	21	Busy
9	Data 3	22	Ground
10	Ground	23	PE
11	Data 4	24	Ground
12	Ground	25	SCLT
13	Data 5	26	Key

Keyboard/Mouse Connector

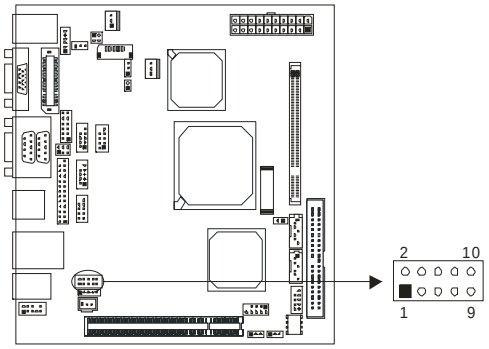
The mainboard provides a PS2 pin header to attach a PS2 keyboard/mouse.



Pin	Assignment
6	VCC
5	GND
4	KB_DATA
3	KB_CLK
2	MS_DATA
1	MS_CLK

Digital I/O Connector

This connector offers 4-pair of digital I/O functions and address is set in BIOS. The default address is: A21H: Output bit0~3; A22H: Input bit0~3.



Pin	Assignment
1	5V
2	Digital-In-30
3	Digital-Out-20
4	Digital-In-31
5	Digital-Out-21
6	Digital-In-32
7	Digital-Out-22
8	Digital-In-33
9	Digital-Out-23
10	GND

*How to Setup Jumpers

The illustration shows how to set up jumpers. When the jumper cap is placed on pins, the jumper is “close”, if not, that means the jumper is “open”.

Pin opened

Pin closed

Pin1-2 closed

CHAPTER 3: USEFUL HELP

3.1 DRIVER INSTALLATION NOTE

After you installed your operating system, please insert the Fully Setup Driver CD into your optical drive and install the driver for better system performance.

You will see the following window after you insert the CD

The setup guide will auto detect your mainboard and operating system.

> ***Note:***
> If this window didn't show up after you insert the Driver CD, please use file browser to locate and execute the file ***SETUP.EXE*** under your optical drive.

A. Driver Installation

To install the driver, please click on the Driver icon. The setup guide will list the compatible driver for your mainboard and operating system. Click on each device driver to launch the installation program.

B. Software Installation

To install the software, please click on the Software icon. The setup guide will list the software available for your system, click on each software title to launch the installation program.

C. Manual

Aside from the paperback manual, we also provide manual in the Driver CD. Click on the Manual icon to browse for available manual.

> ***Note:***
> You will need Acrobat Reader to open the manual file. Please download the latest version of Acrobat Reader software from
> ***http://www.adobe.com/products/acrobat/readstep2.html***

3.2 AMI BIOS BEEP CODE

Boot Block Beep Codes

Number of Beeps	Description
1	No media present. (Insert diskette in floppy drive A:)
2	"AMIBOOT.ROM" file not found in root directory of diskette in A:
3	Insert next diskette if multiple diskettes are used for recovery
4	Flash Programming successful
5	File read error
7	No Flash EPROM detected
10	Flash Erase error
11	Flash Program error
12	"AMIBOOT.ROM" file size error
13	BIOS ROM image mismatch (file layout does not match image present in flash device)

POST BIOS Beep Codes

Number of Beeps	Description
1	Memory refresh timer error
3	Base memory read/write test error
6	Keyboard controller BAT command failed
7	General exception error (processor exception interrupt error)
8	Display memory error (system video adapter)

Troubleshooting POST BIOS Beep Codes

Number of Beeps	Troubleshooting Action
1, 3	Reseat the memory, or replace with known good modules.
6, 7	Fatal error indicating a serious problem with the system. Consult your system manufacturer. Before declaring the motherboard beyond all hope, eliminate the possibility of interference by a malfunctioning add-in card. Remove all expansion cards except the video adapter. ● If beep codes are generated when all other expansion cards are absent, consult your system manufacturer's technical support. ● If beep codes are not generated when all other expansion cards are absent, one of the add-in cards is causing the malfunction. Insert the cards back into the system one at a time until the problem happens again. This will reveal the malfunctioning card.
8	If the system video adapter is an add-in card, replace or reseat the video adapter. If the video adapter is an integrated part of the system board, the board may be faulty.

3.3 TROUBLESHOOTING

Probable	Solution
1. There is no power in the system. Power LED does not shine; the fan of the power supply does not work 2. Indicator light on keyboard does not shine.	1. Make sure power cable is securely plugged in. 2. Replace cable. 3. Contact technical support.
System is inoperative. Keyboard lights are on, power indicator lights are lit, and hard drives are running.	Using even pressure on both ends of the DIMM, press down firmly until the module snaps into place.
System does not boot from a hard disk drive, but can be booted from optical drive.	1. Check cable running from disk to disk controller board. Make sure both ends are securely plugged in; check the drive type in the standard CMOS setup. 2. Backing up the hard drive is extremely important. All hard disks are capable of breaking down at any time.
System only boots from an optical drive. Hard disks can be read, applications can be used, but system fails to boot from a hard disk.	1. Back up data and applications files. 2. Reformat the hard drive. Re-install applications and data using backup disks.
Screen message shows “Invalid Configuration” or “CMOS Failure.”	Review system’s equipment. Make sure correct information is in setup.
System cannot boot after user installs a second hard drive.	1. Set master/slave jumpers correctly. 2. Run SETUP program and select correct drive types. Call the drive manufacturers for compatibility with other drives.

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